

Satisfying the Judicial Gatekeeper:
Assessing Legal Standards for the Reliability of Expert Testimony

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INTRODUCTION

In modern day society, science and empirical research permeate all fields of study, even law. Legal scholar Geoffrey Hazard,¹ makes note of “a continuation of the ‘upward migration’ of the professions’ intellectual bases, from traditional lore taught in traditional class formats in the direction of analytic technique such as mathematical analysis and empirical research informed by such ‘higher disciplines’ as politics, economics, and psychology and, in other professional fields, biochemistry and physics.”² Basically, scientific technique and methodology have become of great concern to the legal profession. Not only does science influence how law is enacted, but various fields of science influence how judges apply law in individual cases. Many cases deal with matters outside the scope of logic and delve into fields of hard and soft sciences, including biology, evolution, medicine, forensics, economics, statistics, political science, et cetera.

Without significant background in these fields, many judges and juries must become pseudo-experts in order to determine how the law applies to the situation, or case, involving the science at hand. As a result, judges and juries depend on expert witnesses to provide a simple and understandable

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¹ Geoffrey C. Hazard is a Trustee Professor of Law at the University of Pennsylvania and a frequent writer on legal ethics and professional responsibility.

² Geoffrey C. Hazard, Jr. The J. Byron McCormick Lecture: ‘Practice’ in Law and Other Professions, 39 Ariz. L. Rev. 387 (1997).

interpretation of the field of study and its specific application to the case. This raises the concern that a lay jury might easily be blinded by “fancy credentials” rather than critically evaluating the strength of the scientific expert’s testimony. Since expert testimony plays a decisive role in the judge’s or jury’s understanding of each case, the court system requires a filtering mechanism to eliminate unreliable testimony, colloquially referred to as “junk science.” Thus, as instructed by varying federal and state legal standards, the judge takes on the role of a Judicial Gatekeeper, who qualifies expert witnesses prior to allowing the jury to hear their testimony.³

RELEVANT LEGAL STANDARDS

The “General Acceptance” Test

The underlying policy of all standards for qualifying experts has highlighted the concern of avoiding and eliminating junk science from the court setting. In 1923, the case opinion of *Frye v. United States* initiated the origin of today’s “general acceptance,” or “Frye,” test. The Frye Court explained that “while courts will go a long way in admitting expert testimony deduced from well-recognized scientific principles or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.”⁴ This first test for expert testimony and scientific evidence indicated that the science should be recognized by the scientific community and basically have a general popularity, or acceptance, in that specified community.

Paralleling the manner in which science has been established over history, the legal community originally integrates and qualifies science according to the general consensus and popularity of an idea. For instance, in *The Church v. Galileo Galilei*, the court accepted the Aristotelian theory that the sun revolves around the Earth without question.⁵ As the geocentric theory conformed to the majority of the worldview and the Bible of the existing

³ David L. Faigman. *Legal Alchemy: The Use and Misuse of Science in the Law*, 62 (W. H. Freeman and Company, 1999).

⁴ *Frye v. United States*, 293 F. 1013 (D.C.Cir. 1923).

⁵ Faigman, *supra* at 14-15.

Christian society,⁶ the court simply deferred to the theologically scientific community and maintained the generally accepted theory of geocentricism.⁷ As a result, the court found Galileo guilty of heresy as he wrote the *Dialogue on the Great World Systems*, which critiqued the geocentric theory and promoted a minority theory of Copernican heliocentricism, which assumes that the Earth revolves around the sun.⁸ As the court has historically practiced this deference to the specified community and qualification of general acceptance for scientific theory, it is perhaps of little surprise that the primary legal standard within the United States would institute a general acceptance rule.

The California “Kelly-Frye” Test

As the federal courts developed the Frye standard of general acceptance, the California State Supreme Court reaffirmed use of the test, now referred to as the Kelly-Frye test. In *People v. Kelly* (1976),⁹ the court unanimously attempted to liberalize the standard to permit more novel testimony into the court system. In doing so, the court adds four prongs to be considered in qualifying “new scientific theories”:

- (i) expert must establish reliability of the method,
- (ii) witness must be qualified as an expert,
- (iii) witness’s testimony must be “relevant,” and
- (iv) witness must demonstrate use of proper scientific procedures.¹⁰

However, by simply adding these prongs to the general acceptance rule, the court still maintained the concept of deferring authority to the scientific

⁶ Id. at 15.

⁷ Id. at 17.

⁸ Id.

⁹ *People v. Kelly*, 17 Cal. 3d 24 (Cal.1976). In the case of *People v. Kelley*, the court examines the reliability of speaker identification by spectrographic analysis, voiceprint technologically. To determine the reliability of the science, the court examines the reliability based upon the general acceptance test submitted in the case of *Frye v. United States*, 293 F. 1013 (D.C.Cir. 1923). To determine whether voiceprint serves as a reliable science that may serve as evidence in California State courts, the presiding court initiates that determination of a science reliability may be ascertained via the general acceptance test. The court’s initiative created case precedent indicating that the general acceptance test serves as the appropriate test by which to determine scientific reliability in California State court.

¹⁰ *Kelly*, 17 Cal. 3d at 30.

community in determining the reliability of the science. Even though the Kelly-Frye test proved to be slightly more liberal than the Frye test, it basically took on the same focus of general acceptance and prevented admittance of novel science that still had not been generally accepted. During an interview, Subject 003 (an attorney and university professor) reveals this conservative effect of the Kelly-Frye test:

I represented [an] this Amish guy accused of murder and incriminated by DNA evidence. I was able to get the DNA evidence excluded under Kelly-Frye grounds basically by showing that the FBI ... had not yet validated a couple aspects of the [the RLFP analysis]. One was the match standard. How do you know whether two DNA profiles match or not? They hadn't yet done much validation of that. There was also controversy at the time about the validation of their statistical evidence ... so that was [the state of the case] in '91, although thereafter ... a lot more validation was done, and, eventually, the FBI test was [viewed by the courts as] well-established [science].¹¹

As demonstrated in Subject 003's experience, a California court, under the Kelly-Frye test, will not admit novel scientific evidence until it has been "well-established" and generally accepted by the scientific community. Therefore, while scientific testimony may be entirely viable, the court may choose not to admit the evidence based on the fact that it is novel. Later, once the scientific community has validated the science, that same type of evidence may be admitted into court and used to prove the guilt or innocence of a murder defendant. In 1993, in the case of *People v. Leahy* (1994),¹² the California

¹¹ Id.

¹² In the California Supreme Court case of *People v. Leahy* (1994), the appellant William Michael Leahy appealed his previous conviction in a lower court. Leahy had been convicted of drunk driving. In the trial leading to conviction, a police officer testified on his administration of the horizontal gaze nystagmus field sobriety test. As the defendant had failed to successfully complete the test, the testimony served as evidence against the defendant. In this particular case, the court remanded the matter to the trial court. The trial court was directed to have a hearing regarding whether the horizontal gaze nystagmus test had achieved general acceptance

State courts affirmed the continued use of the Kelly-Frye test over the newly emerging federal test. Thus, to this day, California state courts use the Kelly-Frye test when qualifying the reliability of scientific testimony by expert witnesses.

The Daubert Test

Over time, as the scientific community began to institute uniformity and procedure through the scientific method, the federal courts initiated a new test to qualify expert testimony. In *Daubert v. Merrell Dow Pharmaceuticals (I)*,¹³ the U.S. Supreme Court rejected the Frye test of “general acceptance” and focused on the Federal Rules of Evidence of 1975 to qualify scientific evidence and expert testimony. Under the evolving federal rules, evidence introduced in court must not only be relevant,¹⁴ but also “reliable.”¹⁵

in the scientific community. In the course of its opinion, the court reinforced the legitimacy of the general acceptance test.

¹³ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). In the case of *Daubert I*, petitioners, Jason Daubert and Eric Schuller, sued the respondent, Merrell Dow Pharmaceuticals, Inc., with their parents. The case was moved to federal court on the grounds of diversity. The petitioners, minor children who suffered from serious birth defects, argued that Bendectin, a prescription drug marketed by Merrell Dow and taken by the respondents’ mothers. In the process of proving that Bendectin does not produce birth defects, the respondent submitted an affidavit of Steven H. Lamm, a physician and epidemiologist. The petitioners gave their own evidence to prove that Bendectin does procure birth defects with the testimony of eight experts of their own. The issue in this case is the standard for admitting expert scientific testimony in a federal trial. In the process of answering this question, the court determined that general acceptance is not a necessary precondition to the admissibility of evidence, but the expert’s testimony must be both reliable and relevant. Evidence, including general acceptance, rate of error, maintenance of standards, whether it was tested, whether the testimony was subject to peer review and publication, and whether it can be falsified. Mostly, it is determined that Rule 402, a rule regarding relevance, and Rule 702, which focuses on reliability, that are from the Federal Rules of Evidence of 1975 determine the qualifications for expert testimony. While these two rules must be satisfied, the application remains flexible.

¹⁴ Scientific evidence will be relevant to deciding of the case and determines “[I]f scientific..or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue.” *Daubert*, 509 U.S. at 589. If the Court decides that testimony is relevant to the understanding and outcome of an issue within the case at hand, then the Court will go on determine the reliability of the testimony.

¹⁵ Francisco Ayala and Bert Black. *Science and Courts*. *American Scientist*. May-June 1993, at 230.

The qualification of expert witnesses in the *federal* courts is part of the “reliability” inquiry. The federal rules emphasize that the testimony must constitute scientific knowledge that is derived by use of the scientific method. “[I]n order to qualify as ‘scientific knowledge,’ an inference or assertion must be derived by the scientific method.”¹⁶ The reliability test requires an examination of four main factors indicating the reliability of the theory or method. According to the Supreme Court in *Daubert*, expert scientific (or technical) evidence should not be admitted unless the theory or method has been:

- (i) tested;
- (ii) peer reviewed and published;
- (iii) generally accepted in the scientific community;
- (iv) deemed to have an acceptable rate of error and subjected to standards controlling technique operation.

Although the Court incorporates the “general acceptance” test within the indicia of reliability (see third factor), the *Daubert* test proves fairly liberal in qualifying testimony, since any combination of these factors may be used to prove reliability. According to the *Daubert* test, experts are not automatically excluded in cases in which their scientific theory proves innovative and not yet generally accepted. In the end, this particular method used by the federal courts incorporates significant reference to the scientific method, remaining open to novel theory that has not had enough time to widely spread (or perhaps be widely evaluated by the actual scientific community). In other words, the *Daubert* test requires judges, who are most likely amateurs in the particular field of scientific study, to evaluate the validity of the science itself in addition to the particular testimony offered.

While the *Daubert* Test assesses reliability by examining four different prongs, including the *Frye* test’s single prong of general acceptance, one may misconceive of the *Daubert* test being extremely. However, the test proves to be far more liberal and subjective to the judge. As interpreted in *Daubert v. Merrel Dow Pharmaceuticals, Inc. (II)* “[W]e read these factors as illustrative rather than exhaustive; similarly, we do not deem each of them to be equally applicable (or applicable at all) in every case.”¹⁷ Rather than having to satisfy

¹⁶ *Id.* at 590.

¹⁷ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43F. 3d 1311, 1317 (9th Cir. 1995).

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every prong, the scientific testimony need only satisfy the judge. The judge may personally determine which prongs, if any, must be satisfied to qualify the testimony as scientifically reliable.

A few years later, the Supreme Court reiterated in the *Kumho Tire Company, Ltd., v. Carmichael* case that the Daubert test of reliability remains flexible and the weight of each prong is subject to change on a case-by-case basis.¹⁸ In *Kumho*, Justice Breyer explained that a particular prong that proves essential in one case may not remain applicable in another. He stated:

It might not be surprising in a particular case, for example, that a claim made by a scientific witness has never been the subject of peer review, for the particular application at issue may never previously have interested any scientist. Nor, on the other hand does the presence of *Daubert's* general acceptance factor help show that an expert's testimony is reliable where the discipline itself lacks reliability, as for example, do theories grounded in any so-called generally accepted principles of astrology or necromancy.¹⁹

In other words, while general acceptance and peer review may constitute the sole basis for reliability of cochlear implant technology, the same general acceptance may simply not carry enough weight to prove scientific reliability in the area of fortune telling.

Not only did Justice Breyer further define the Daubert, he also applied this theory of the relative weight of the Daubert prongs in the case of *Kumho Tire*. The *Kumho Tire* case involved dispute over the reliability of expert testimony proffered by the plaintiff. In *Kumho*, the plaintiffs, the Carmichaels, brought suit against the maker and distributor of the tire that blew out and led to an accident and death of the one of the Carmichael's passengers. The plaintiffs based their case on the expert testimony provided by Dennis Carlson, Jr., "an expert in tire failure analysis."²⁰ The Supreme Court determined that the Daubert test remained applicable not only to scientific testimony, but also "technical" and "other specialized" knowledge.²¹ Justice Breyer liberally

¹⁸ *Kumho Tire Company, Ltd., v. Carmichael*, 526 U.S. 137, 156 (1999).

¹⁹ *Id.* at 151.

²⁰ *Id.* at 142.

²¹ *Id.* at 146.

applied the Daubert test of reliability to the plaintiff's testimony. After finding that none of the Daubert factors could be satisfied by the expert testimony, Breyer sought out "countervailing factors operating in favor of admissibility which could outweigh those identified in Daubert."²² Unfortunately for the plaintiff, such outside factors could not be found and the parties had offered no such factors. As a result, the Court did not admit the plaintiff's expert testimony into the case.²³ Although this liberal application of the Daubert test does not lead to the admittance of the plaintiff's expert testimony, the way that Justice Breyer applied the test demonstrates that the value of each prong is arbitrary and the judge may even develop other factors on which to base reliability upon. Overall, Daubert -- the test used to this day in the federal courts (even California's federal courts) -- remains a liberal test of admissibility that depends heavily on each judge's relative application in an individual case.

Using the Legal Standards

As both Kelly-Frye and Daubert offer reliability tests that determine admissibility, certain issues may arise in court that may appear as issues of admissibility but, in reality, do not constitute such. Rather, these issues may be more case specific and may be argued in cross-examination. For instance, if the specified scientific community generally accepts a science that is admissible under Kelly-Frye, the case is far from over. Subject 003 reflects on an experience as an attorney in an extremely high profile murder case:

Although I wrote a brief over a hundred pages..which I thought was the strongest case I could have made..on the other hand, I was telling the lawyers..this is looking like a loser, because the DNA evidence was actually well-established by this point..The problems were more case-specific..which really aren't issues of admissibility.²⁴

This serves as a reminder that not all court-related evidentiary controversies are issues of admissibility.

²² Id. at 156.

²³ Id.

²⁴ Subject 003, supra note 11.

While the weight or admissibility of scientific evidence may be determined by a number of factors, the basis of this author's research has been to identify and examine solely issues regarding the tests of "reliability."

- As noted above, the Kelly-Frye California state standard tests reliability of scientific testimony by deferring authority to an outside source, the specified scientific community. Under Kelly-Frye, the party must prove that the scientific community from which the science stems generally accepts the science at hand in order to establish reliability.
- On the other hand, the structure of the federal Daubert test maintains all authority within the court and legal structure. Under Daubert, becoming a pseudo-expert himself, the judge presiding over the case may determine the reliability of the science. In order to establish reliability under Daubert, the judge must examine the four major prongs proposed by Daubert, including that the science or method has been (i) tested, (ii) peer reviewed and published, (iii) generally accepted in the scientific community, (iv) deemed to have an acceptable rate of error and subjected to standards controlling technique operation.²⁵ According to *Daubert* and *Kumho Tire*, it is not necessary for the party to establish that the science meets all four criteria. Rather, in each individual case, the presiding judge determines the weight of each prong and may determine reliability with only a fraction of the prongs met or even none of the prongs being met, but with "countervailing factors operating in favor of admissibility" and outweighing the already existing prongs.²⁶
- In the end, the varying legal standards amongst California State and Federal courts prove to have somewhat different criteria, but they serve the same general goal of eliminating "junk science" from the courtroom.

Despite this commonality of goals, problems from the varying legal standards of Daubert and Kelly-Frye still arise and need to be improved upon. Perhaps, the two legal standards result from fear of mistake. As the great philosopher John Stuart Mill described it, "[T]he peculiar evil of silencing the expression of an opinion is that it is robbing the human race, posterity as well as the existing generation -- those who dissent from the opinion, still more than those who

²⁵ *Daubert*, 509 U.S. at 12c.

²⁶ *Kumho Tire Company, Ltd.*, 526 U.S. at 156.

hold it.”²⁷ Mill goes on to explain that if the proposed opinion proves correct, then those who earlier disagreed with the position now realize its variability (as in Galileo’s day in which his theories were put forth despite the unpopular response and eventually proved true). On the other hand, if the opinion proves wrong, then the ill-conceived perception of truth is corrected and may only enhance the truer option.²⁸ The one concern that courts maintain is that the jury will not identify the wrong opinion, which will prove detrimental to the administration of justice. Overall, a fine balance of sifting through the reliability of scientific testimony exists with the already existing legal standards of Daubert and Kelly-Frye.

PROBLEMS

The Hindrance of Hired Whores

As both the federal and state courts instituted their own legal standards to test the reliability of scientific evidence, their actions constituted a response to existing problems accompanying scientific expert testimony. Many of these problems are buffered by the Frye and Daubert legal standards but are not necessarily solved. Junk science continues to find its way into the courtroom in various forms, including expert witnesses known as “hired guns.” In many cases, both parties present their own expert witnesses, such as in the case of *Daubert v. Merrell Dow, Inc.* [Daubert I]. As done by the petitioners and respondent in Daubert I,²⁹ these witnesses often give testimony contrary to one another in their interpretation of the science, on topics ranging broadly from psychological analysis to DNA validity to causes of disease, et cetera. While each side pays his own expert, people are enticed by compensation, a point that Subject 002,³⁰ a professor of Psychology and expert witness, argues against:

²⁷ John Stuart Mill. *On Liberty* 21 (1859) (Currin V. Shields ed., Bobbs-Merrill Educational 1982).

²⁸ *Id.*

²⁹ *Daubert*, 509 U.S. at 583.

³⁰ Interview with Subject 002, a university professor of Psychology with a private practice in Clinical Neuropsychology and Forensic Psychology (May 2, 2003). With experience as an expert witness in California state court, Subject 002 poses an excellent subject in the study of the actual implementation of the Kelly-Frye standard in qualifying expert witnesses. Subject

“You can always find somebody with an opinion that agrees with whatever you want him to.”³¹ Therefore, all parties and attorneys have the opportunity to hire an expert witness that will provide testimony sympathetic to their case.

In describing one of his experiences of hiring an expert witness, Attorney Subject 003³² notes, “He gave me an answer that I liked, and so I decided to call him. If he had given me an answer that I hadn’t liked, I would have looked for someone else... The lawyers can pick and choose experts.”³³ Although not all expert witnesses present their testimony to accommodate their client for the sake of payment, the influence of compensation and the hiring lawyer often leads to the presentation of contrary scientific testimony in a single court case.

Contrary evidence may arise in a number of fashions, including direct refutation of the validity of one’s science. In a Missouri case during late 1985, a clinical ecologist Betram Carnow testified on behalf of the plaintiffs, thirty-two residents against Alcolac, Inc., a chemicals manufacturing plant for soaps and cosmetics.³⁴ In one of his analyses, Carnow claimed that a plaintiff tested positive for probable liver cancer by a single urine sample. In the same case, the defense’s witness, a physician, stated that “no one educated after 1960 could possibly’ have relied on the tests that Carnow used to diagnose liver disease.”³⁵ As logic determines that no two contrary statements can be simultaneously true, one of the experts had testified to a mistruth.

Huber explains in his book, *Galileo’s Revenge*, the Carnow’s study of clinical ecology, or the assumption “that chemicals cause almost every human affliction,”³⁶ had been disproved as a science time and time again through a variety of studies. These studies tracked numerous aspects of the immune system of individuals exposed to high levels of suspect chemicals from accidental spills in the United States, Japan, Taiwan, and Italy. As of 1987,

002 provided a new perspective, accentuating a concern over the judge’s personal bias in actual implementation of qualifying expert witnesses. See Appendix 3.

³¹ Id.

³² Subject 003, *supra*.

³³ Id.

³⁴ Peter W. Huber. *Galileo’s Revenge: Junk Science in the Courtroom* 96 (Michael McElwee ed., Basic Books 1991).

³⁵ Id. at 98.

³⁶ Id. at 93.

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these very studies done by epidemiologists with over forty years of data concluded that the scientific determinations of clinical ecologists have no validity according to this study. Scientific testimony indicates that the science of clinical ecology does not constitute a reliable science or source of diagnosis. However, the practice of clinical ecology remains well accepted by members of the field, and various individuals still rely upon the diagnosis of a clinical ecologist.

Evaluating the continuing faith in clinical ecology among practitioners and patients, Huber notes that the majority of patients examined by clinical ecologists are litigation-related.³⁷ In other words, much of the faith put into a disproved or artificial science may result from the desire for a particular diagnosis in a particular lawsuit. For instance, if a plaintiff files suit against a chemical company and attempts to make a connection between his cancer and the chemicals emitted from the plant, then that person will seek out expert testimony to prove that connection. If the plaintiff's doctor or other scientists refute such a claim with their own studies but the clinical ecologist will provide a prognosis in favor of the plaintiff's claim, then the plaintiff will obviously hire the clinical ecologist. Therefore, assuming that clinical ecology has been disproved as a reliable science, what maintains the use and faith in the study is the desire for particular testimony in cases of litigation.

As the parties hire an expert witness to attain an end of evidence accommodating to their respective case, the expert witness may have his own agenda of obtaining significant payment. This prominent tendency amongst expert witnesses to act for financial gain has led some individuals to conclude "[P]eople are just hired guns."³⁸ Subject 007,³⁹ who has testified in California state court as an expert witness, shared an experience regarding another expert witness who had a financial-based motive. In testifying during a case, Subject 007 met a psychologist who had worked in a hospital and had become rather

³⁷ Id. at 107.

³⁸ Interview with Subject 007, anthropologist and university professor of Social Ecology (May 14, 2003). Subject 007 served as an expert witness in California State Court numerous times. Subject 007 has primarily testified in gang cases in urban and suburban counties. Subject 007 did address concern for the misrepresentation by some expert witnesses of their science. The Subject also demonstrated concern over the judge's limited knowledge of the science when qualifying scientific testimony. See Appendix 6.

³⁹ Id.

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knowledgeable in the area of trauma connected with gang shootings. Upon testifying in a single case, this individual realized the financial possibilities as an expert witness and quit his job at the hospital to work solely as an expert witness, opening up offices in both Southern and Northern California in the pursuit of financial gain. In some cases, one's interest in financial gain may taint the scientific testimony. Subject 007 describes an incident in which an expert witness, who was a psychologist, had "listened to my theoretical framework and ...wound up ...misusing it."⁴⁰ Not every expert witness is a 'whore' for hire; however, expert testimony based on financial motive risks the introduction of faulty evidence entering the courtroom.

With the continuous abuse of expert testimony by the whoring of experts for money, an issue of financial waste may arise. Subject 007 insists:

It's a waste of taxpayers' money -- the way that experts are bought in, including me. They pay us very well.... There has got to be some better way for us to administer justice and bring experts in ways that are not part of a political network [which is what Subject 007 insists the use of experts has become].⁴¹

Here, Subject 007 specifically discusses the unusual circumstance under which the courts approve the amount to be spent on the payment of expert witnesses. Subject 007 even jokes about how he occasionally quotes a higher price to discourage attorneys and then ends up shocked when an attorney comes back with court-appointed documents approving the cost.⁴² Certainly, as many expert witnesses may testify solely to accommodate their client or debunk one of the opponent's experts, thus creating a case environment prone to the production of diverse and even contrary testimony, some absurdity lies within the excessive payment of expert witnesses and creates inefficient court proceedings, both in time and money.

While some expert witnesses may be guilty of tailoring their testimony in favor of the hiring-party and acting as hired guns, outside, influential factors, including lawyers, may contribute to this effect. Attorney Subject 003 admits, "I think that lawyers are all the time trying to influence their experts."⁴³

⁴⁰ Id.

⁴¹ Id.

⁴² Id.

⁴³ Subject 003, *supra*.

However, Subject 003 also notes:

Nobody wants to be treated like a whore. What tends to work better..[is] often, when I make the pitch to experts, it's about when I want them to be critical of a forensic lab. I talk about standing up for good science.... It's important for you to be critical, because it's going to raise the standards of science... I portray the attack on the crime lab to be a really virtuous thing..[,] so we're on the side of justice Of course, the ... prosecutors are saying... '[T]hese poor victims, the rape victim, the murder victim! Nobody speaks up for the victim. We're just trying to get the truth.'⁴⁴

In the end, each party may convince his own expert that the expert's testimony is component of maintaining justice and truth. Thus, the experts choose to accommodate the party and testify on that side's behalf. Of course, this influence by attorneys and parties may in fact influence the presentation of evidence, causing experts to bias their testimony on behalf of the hiring-party, which has identified its cause as noble. Attorney Subject 003 explains:

There sometimes is pressure on experts[,] especially on people who work for small private labs[,] to keep the customers happy. It doesn't mean they're going to outright lie, but if there are two ways to present something and one makes their client happier, sure, that'll happen.⁴⁵

In order to serve the greater good of truth and to keep the paying client content, the expert witness may tailor the presentation of testimony to serve the client's interest. As many expert witnesses constitute hired guns, these particular witnesses continue to pose a problem of presenting tainted evidence to a judge and jury.

On the other hand, not all expert witnesses act as naïve, irresolute lambs. After some experience as an expert witness, many experts may realize the tactics that lawyers use to influence witnesses. As an expert witness, Subject 007 realized that 'lawyers have a bad habit of painting a scene and giving me a scenario that's of course positive on behalf of their client, but not

⁴⁴ Id.

⁴⁵ Id.

necessarily what I consider the truth.”⁴⁶ Imagine that a defendant in a case of assault and battery is attempting to prove that the violence was not gang-related, since this charge would indicate a higher penalty. Perhaps, the attorney approaches an expert on gang violence and inquires about the expert’s opinion on the case. Instead of simply giving the facts of the case, the expert may pose his own theories on why the incident does not constitute gang-related activity. At this point, if the expert recognizes the attorney’s tactic of influence but disagrees with the prognosis, he has one of two choices. The expert may either choose to testify on behalf of the defendant with an obscure conclusion that he would not have come to through his own science, or the expert may choose to remain honest to his science and refuse to testify on behalf of the defendant.

While ‘whoring’ experts may accept the influence of the attorney and accommodate the client through a favorable presentation of the evidence or simply a mistruth, some experts refuse to allow attorneys and parties in a case to rob them of their academic integrity. Subject 007 notes, “[G]enerally, I turn lawyers away, because I don’t feel I can add anything to their case.”⁴⁷ This dynamic simply suggests that the influence of attorneys does not prove absolute and can be resisted on an individual basis by the expert witnesses themselves. In the end, the whoring of expert witnesses stems from the decision of the witness. However, while some witnesses maintain their academic integrity, attorneys will choose other witnesses with less integrity to testify on behalf of the hiring-party in court. Therefore, the same junk science can find its way into the courtroom until the day that not a single expert is willing to abandon his integrity to his science.

As numerous individuals choose to abandon the integrity of their science or obscurely explain possible theories in court, a varied assortment of testimony may be produced in a single trial. This testimony of plaintiff and defendant expert witnesses may prove contrary to each other, since an individual expert possibly chose to misrepresent the science. The high-price reimbursement received by expert witnesses may encourage some to present junk science. As a result, a serious need for a means of excluding junk science exists in the court and has been attended to via the legal standards of Daubert and Kelly-Frye. However, as explained, junk science continues to enter the

⁴⁶ Subject 007, *supra*.

⁴⁷ *Id.*

courtroom, and, in the case of hired guns, the reason for this tainted evidence derives from the individual decision of the expert himself. Ultimately, the best means to improve this problem would be that all experts would hold and implement Subject 007's personal ideal to 'remain true to [your own] disciplines and not be a hired gun, or a whore.'⁴⁸ However, as many individuals are tempted act in their own self-interest and have proven to be corruptible by greed, this solution remains unlikely.

The Fraud of Forum Shopping

As previously noted, two very different standards of reliability for expert testimony exist in California State courts and United States Federal courts. While California State courts implement the Kelly-Frye test which qualifies the science of expert testimony on the basis that it is generally accepted by the scientific community from which it stems, Federal Courts utilize the Daubert test, another reliability standard for admittance of scientific testimony. However, under the Daubert test, the presiding judge may determine the weight of each prong in the individual case and may base reliability on satisfaction of all four prongs or only a single one. In fact, under the Daubert test, the judge may determine reliability based on factors not addressed in the four proposed prongs.⁴⁹

As the Kelly-Frye and Daubert tests provide very different standards for the reliability and admittance of scientific evidence, each test may prove more conducive for the admittance of particular expert testimony. Parties in court cases may find themselves forum shopping for the State or Federal court that will admit their proposed expert testimony. Therefore, these variations of qualifications for reliability of scientific evidence in California State and Federal courts result in the manipulation of forum shopping by parties, who propose to utilize scientific evidence by means of expert testimony.

While the Kelly-Frye test offers acceptance of long-used scientific methods that have gained general acceptance, these same "scientific" methods may not survive under the Daubert qualifications for reliability, resulting in the unfortunate battle of forum shopping. For instance, under the Kelly-Frye test, handwriting analysis would qualify as a reliable science while, in Galileo's day, the presently accepted heliocentric theory would fail horribly under the

⁴⁸ Id.

⁴⁹ Kumho Tire Company, Ltd., 526 U.S. at 156.

Kelly-Frye test. Handwriting analysis was used in the case of *People of New York v. Roland Molineux*.⁵⁰ In this case, the State of New York charged Mr. Molineux with attempted murder of Harry Cornish, an employee of Mr. Molineux who had recently had a dispute with him, and the actual murder of Mr. Cornish's aunt, Katherine Adams. Katherine Adams had died from ingesting cyanide, which had been added to a headache medication that had been sent to Mr. Cornish via the mail.⁵¹ Part of the evidence against Mr. Molineux included the "science" of forensic document examination."⁵² The state introduced the testimony of eighteen expert witnesses specializing in handwriting analysis, who testified to the fact that the handwriting on the anonymous note that came with the package containing the headache medication, which had procured the death of Katherine Adams, belonged to Roland Molineux. This testimony secured the state's victory in the case.⁵³ Considering the multitude of witnesses that testified on behalf of the state, this handwriting evidence proved well accepted by the scientific community from which it stemmed. Therefore, under the Kelly-Frye standard handwriting evidence would prove reliable and would be admitted into court.

However, this same handwriting analysis may not qualify as reliable evidence under the Federally-implemented Daubert standard. In the case of *People of New York v. Roland Molineux*, the expert witnesses possessed no formal training in handwriting identification.⁵⁴ At the time of the trial during the nineteenth century, no American Universities taught handwriting analysis. Still, few American universities actually maintain programs that teach this "science." Under the Daubert test, one would consider reliability by examining four major factors discussed previously. In the case at hand, none of the experts had performed any research on handwriting patterns in the general population. None of the prosecutor's experts possessed any formal training in handwriting identification. In fact, at the time, no American University offered such a program.⁵⁵

⁵⁰ David L. Faigman, *supra*, at 1-2.

⁵¹ *Id.*

⁵² *Id.* at 2.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

The handwriting experts presented in this case lacked the credentials that would verify their scientific testimony as reliable under the Daubert standard of the Federal Court System. They only had experience as bank tellers citing the veracity of signatures for their employers.⁵⁶ Judging the scientific reliability of these experts' testimonies based upon the Daubert standard, their science fails horribly. Considering the four major prongs, none of the experts had tested their theories on handwriting analysis, and, as no handwriting analysis programs existed in American Universities, they also lacked the support of peer review and published documentation of their science.

Furthermore, not bothering to test their science, the experts did not even possess an experiment to subject to standards controlling technique operation and possessed no data that could be examined for an acceptable rate of error. Although the experts did submit that their handwriting analysis methods were generally accepted amongst themselves, the failure of their science to meet the other three factors would likely lead a federal judge's determination that the science remains unreliable under the Daubert Test. In effect, a party with such expert testimony involving a well-accepted science that has little experimental evidence like that of handwriting identification would likely attempt to enter a California State Court forum that implemented the Kelly-Frye standard.

Conversely, other parties who possess expert testimony based upon a newer science may find a more conducive forum in Federal Court, which institutes the Daubert standard for reliability. While the Kelly-Frye test proves conducive for expert testimony involving a long-time used "science," the standard neglects to acknowledge the reliability of newly implemented scientific discoveries. Imagine that the court in Galileo's day implemented the Kelly-Frye test. If one were to attempt to submit Copernicus' heliocentric theory, of which Galileo was a supporter, the theory that the earth revolves around the sun,⁵⁷ in that court of law which implemented the Kelly-Frye test, this presently proven theory would fail to prove reliable in the day of Galileo. In the early seventeenth century, the scientific community generally accepted the geocentric theory, which submits that the earth equates the center of the universe.⁵⁸ As a new theory, heliocentrism lacked the general acceptance

⁵⁶ Id.

⁵⁷ Id. at 17.

⁵⁸ Id.

necessary according to the Kelly-Frye standard. Typically, new scientific theories lack the stature of general acceptance since they have yet to be well circulated around the scientific community, and thus fail to satisfy the general acceptance test of Kelly-Frye.

While these newer standards that have yet to be generally accepted fail to prove reliable in courts that institute the Kelly-Frye test, parties may often push to have their expert testimony considered in Federal Court which implements the Daubert standard. In this case, a party may prove the reliability of his scientific testimony by submitting experimental data and published works that support the theory. For instance, if the early seventeenth century court of Galileo's time maintained the Daubert standard and had been presented with the heliocentric theory, the probability of the admittance would significantly increase. As for the first factor, one could establish that Copernicus had previously proven the heliocentric theory through a medley of scientific calculations and tests in the early sixteenth century.⁵⁹ In regards to peer review, one might present Galileo's text, the *Dialogue on the Great World Systems* in which Galileo critiqued and disproved the geocentric theory while establishing excellent support for the heliocentric theory.⁶⁰ Finally, one could review Copernicus' experiments to determine whether his data procured an acceptable rate of error and whether his tests proved subject to appropriate standards. All together, newly established scientific theories fair a better chance of being accepted as reliable in a court of law that implements the Daubert test, since one can submit experimental evidence as proof for the reliability of the science and override the lack of general acceptance.

While the Kelly-Frye and Daubert standards differ and effectively procure different determinations of reliability, legal parties with expert testimony often take these standards into account when determining what court they prefer to file in. If a particular court implements a standard that favors the party's scientific testimony, then the party will likely work toward having their case accepted in that court. As one may foresee, such dynamics may lead to the manipulation of forum shopping. If a person possesses expert testimony, which espouses a theory that the primary scientific community generally accepts but lacks experimental evidence and publications to verify the reliability of the

⁵⁹ Id. at 15.

⁶⁰ Id. at 17.

science, then the person may aim to submit the case to California State court which depends on the Kelly-Frye test. On the contrary, if a party has expert testimony advocating a new scientific theory that has yet to gain general acceptance, the party will likely aim to have the case accepted into Federal Court which implements the Daubert standard. As party's case may vitally depend on the expert testimony, the plaintiff and defendant may find themselves quibbling over the forum of the case. Such manipulation of the legal system through forum shopping may lead to the eventual ineffectiveness of the courts.

*A Need for Knowledge:
Juries' and Judges' Layperson Interpretations*

Wherever a legal case is heard, be it in Federal or State court, either a judge or jury makes the necessary factual findings on the case. Therefore, when parties present scientific expert testimony, the judge or jury determines how the evidence should impact the holding of the case. As no legal standard indicates that judges or juries must possess a science degree, often these arbiters lack knowledge and understanding regarding the science that may be presented to them as evidence. The unfamiliarity of the judge or jury with the science may have disastrous repercussions. The arbiter's lack of scientific knowledge may result in problems ranging from oversimplification of the evidence to the inaccurate analysis of the science's reliability to a miscomprehension of the scientific testimony.

Most judges and juries do not possess a highly detailed background in every field of science that an expert witness may testify on; thus the expert must explain his science and its applicability on the most basic level possible. The expert may use a variety of means to convey the meaning of his testimony. For instance, Subject 005⁶¹ explains, "I try to use analogies first to get people thinking."⁶² For instance, to get a juror or judge to comprehend the potentiality of lab error and the potentially deceitful nature of statistics, Subject 005 develops the analogy by theorizing that a scientist says, "I have a great missile

⁶¹ Interview with Subject 005, a university professor of Ecology and Evolutionary Biology (May 5, 2003). Subject 005 possesses a strong background in biology and has served as an expert witness in California State court and Federal Military court, typically testifying in regards to DNA evidence. See Appendix 4.

⁶² Id.

system, because once its fired it only misses the target one out of a million times.”⁶³ Then Subject 005 explains, “[W]hat he forgot to tell you is it only fires 50% of the time.”⁶⁴ Subject 005 uses such analogies to reveal how scientific testimony can prove quite misleading. The use of analogies serves as one way that an expert witness may attempt to relate his scientific theory to the jury.

Although judges and jurors are not necessarily entirely ignorant of scientific concepts and theories, they commonly lack a scientific background that allows them to fully grasp scientific testimony. Speaking of the jury’s comprehension of scientific testimony, Subject 003 exclaims, “I was appalled at how poorly they understood things!” Such lack of background may draw concern over the admission of junk science, dismissal of veritable science, and the incorrect application of scientific evidence in a case. As judges may lack scientific background, concern arises as they are given power to act as gatekeepers of science in Federal court. Under the Daubert standard, judges determine whether the scientific testimony proves reliable or not according to various factors. Furthermore, if the science is reliable and the judge admits the testimony, an unprepared jury must apply the evidence to determine a holding for the case. Without proper scientific background, the jury may fail to properly comprehend and apply the scientific testimony. As Subject 003 stated, “Judges and juries who haven’t been exposed to the technical literature may not know what they need to know to reach a reasonable decision.”⁶⁵

As scientific testimony becomes increasingly common in a court of law, many experts assert that a need for scientific education exists within the legal arena. Some individuals might assert that dismissal of scientific testimony from the courtroom would remove the problem that the judges and juries have when they encounter scientific theory, which they have no prior familiarity with. However, Subject 003 argues:

We are increasingly in a technical era where factual disputes in courts cannot be resolved without scientific experts.... You

⁶³ Id.

⁶⁴ Id.

⁶⁵ Subject 003, *supra*.

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have to have an expert to present it, and, increasingly, you have to have an expert to evaluate it.⁶⁶

As the courts inevitably must incorporate scientific evidence into various legal cases, the real need lies in educating the arbiters who listen to and must apply the scientific testimony. Some experts, such as Subject 001⁶⁷ would require legal professionals to be educated in specific sciences. As a child psychologist who has testified in cases of child abuse, Subject 001 maintains, ‘I think there needs to be a lot of education of both attorneys and judges and anybody ... involved in any kind of legal aspect ... when it comes to children in abuse cases.’⁶⁸ Particularly concerned with personal experiences as an expert witness in court, Subject 001 acknowledges a ‘need for education on child psychology, child development[,] children’s language and how they tell their stories.’⁶⁹

As one can imagine, likely every expert would prefer that judges and juries be fully educated on each of their own scientific fields. However, such objectives remain impossible. Judges and juries possess a limited amount of time to hear cases and listen to the evidence. As a judge and jury hear one case, thousands of other cases are filed. The number of legal cases just continues to grow, each case needing to eventually be tried.

Furthermore, as a judge must obtain an education relating to his own field of work, the law, he often has little time to obtain several other degrees in various sciences. Even if a judge were mandated to obtain a science degree, he would still not satisfy numerous other experts since his scientific knowledge would be limited to the particular science in which he obtained a degree. As in any field of study, there are always sub-fields that require a deeper study. Therefore, although many scientists and expert witnesses would prefer science

⁶⁶ Id.

⁶⁷ Interview with Subject 001, a university professor in Psychology and Child Development (April 23, 2003). Previously serving as a psychologist in a pediatric hospital, Subject 001 also possesses field experience. Subject 001 has testified as an advocate in one case and as a qualified witness in two other cases. In the interview, Subject 001 highlighted characteristics of science, including the idea that science does not equate to black and white. Subject 001 also stressed a great need for scientific education amongst judges and juries. See Appendix 2.

⁶⁸ Id.

⁶⁹ Id.

background requirements for judges and juries, the answer does not lay in the concept that judges and jurors become experts in particular scientific fields.

As judges and juries often lack scientific background, however, they may incorporate various misconceptions into their application of scientific testimony, including the misconception that science equates to black and white. When a layman listens to a scientist espousing theories, often the layman takes what the scientist says as fact instead of acknowledging the testimony as scientific theory. Non-scientists may often have difficulty conceiving of science as theory. Many laymen consider science to indicate whether something is or is not fact. For instance, people trust that if science indicates people evolved from apes then people evolved from apes. Non-scientists fail to conceive that most of science consists of theory, not proven fact.

To obtain a better comprehension of science as working theory, one should examine the foundation of all science, the scientific method. The scientific method may be broken down into the following five major steps:⁷⁰

1. Observe some aspect of the universe.
2. Develop a hypothesis, or tentative explanation and description, for what you observed.
3. Using the hypothesis, make predictions.
4. Test the predictions by means of experiment or observation and adjust your hypothesis according to your results.
5. Repeat steps 3 and 4 until no discrepancy between your hypothesis (i.e. theory) and results exist.⁷¹

Once the hypothesis maintains consistency in various experiments and observations, the hypothesis is considered a theory. The theory acts as a framework from which scientists make observations and predictions.⁷² All scientific information is solely theory, not fact. Science is not clearly *proved*: a scientific theory is a hypothesis that has not been *disproved*. Therefore, science

⁷⁰ Jose Wudko, What is the 'scientific method'? (Visited January 4, 2004). <http://phyun5.ucr.edu/~wudka/Physics7/Notes_www/node6.html#SECTION021210000000000000>.

⁷¹ Id.

⁷² Id.

simply constitutes guesses or assumptions that have not been disproved by experimental evidence or observation. As a result, science remains somewhat tentative and does not constitute black and white, or clear wrong and right, as many non-scientists may believe.

As science remains theoretical, the Court also recognizes this gray area of scientific testimony. In the decision of the *Daubert I* case, the Court notes:

Of course, it would be unreasonable to conclude that the subject of scientific testimony must be ‘known’ to a certainty; arguably, there are no certainties in science... ‘Indeed, scientists do not assert that they know what is immutably ‘true’ – they are committed to searching for new, temporary, theories to explain, as best they can, phenomena.’⁷³

This very tendency for science to constitute indefinite theory proves problematic for the jury, particularly when presented with two scientific expert witnesses whose theories contradict each other’s outcomes. As many non-scientists consider scientific knowledge to be fact, they become confused and overwhelmed when presented with contradictory scientific testimony. In their minds, they recognize that contradictory determinations cannot both be true. However, considering science to be fact, which must be true, and acknowledging the testimony as scientific, they find themselves confronted with a paradox, which could possibly distort their line of reasoning.

If the juror would acknowledge the uncertainty of scientific theory, he would not be confronted with such a paradox. The reality of this contradictory testimony, aside from the dynamic of whoring experts, often results from the gray area of science. Subject 003 notes, ‘Nobody will say black is white.... There are shades of gray. If it’s gray they’ll vary on how gray they think it is.’⁷⁴ By acknowledging the theoretical shades of gray, a juror would be able to understand where the contradictory testimony may result from.

Furthermore, the judge and jury’s acknowledgment of the veracity of different theories and testimony would procure a better application of the evidence to the case. While newer and older theories may both be presented in a case, the jury should understand that the new theory does not cancel out the

⁷³ *Daubert*, 509 U.S. at 590.

⁷⁴ Subject 003, *supr.*

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old theory. Subject 001 states that the production of new theory simply shows that “[W]e’re adding on our knowledge base over time.”⁷⁵ Subject 001 argues:

Depending on how the research is designed ... we get new information. It does not necessarily mean that they [the theories] are in conflict, but they are taking different perspectives of the same issue.⁷⁶

Jurors should not ignore other theories because they maintain that another theory must be true. When dealing with science, a juror should recognize:

[W]e can never really ... dwindle down ... science to one or two research projects, articles, or outcomes. We have to look at the whole and what has ... contributed to those different knowledge bases....It’s not black and white. It’s not one way or the other when it comes to science.⁷⁷

Still, the discrepancy may result from error of one of the theories or perhaps human error in an experiment, but the jury should acknowledge each theory just as that, a theory. Evaluating each theory on its own and not assuming that one cancels out the other, a juror will obtain a more complete collection of evidence. By acknowledging the uncertainty of science, the judges and jurors may take in all the scientific evidence, evaluate it, and make a more informed determination for the holding of the case.

In the end, the judge and jury’s lack of scientific knowledge put them at a great disadvantage in ruling in a case. To begin with, such judge and jury’s lack of scientific background may cause the expert witness to oversimplify or distort his testimony in trying to give an understandable layman’s interpretation. As Subject 003 learned through his graduate students’ research, many jurors poorly comprehend the scientific testimony. A judge’s lack of scientific knowledge draws concern to the Daubert test, which allows the judge to determine the reliability of scientific testimony. Additionally, the juror’s miscomprehension of science and its uncertain nature may procure an unjust

⁷⁵ Subject 001, *supra*.

⁷⁶ *Id.*

⁷⁷ *Id.*

ruling. Overall, the lack of scientific knowledge amongst legal professionals poses a serious problem.

Kelly-Frye and Its Frailties

As the judge and jury's lack of scientific background produces various problems for the use of scientific evidence in legal cases, the importance of an effective legal standard that tests the science's reliability becomes evermore apparent. In effect, one might evaluate the current legal standards for scientific reliability. If the court institutes an effective reliability standard, then the jury will not have to deal with the obstacle of determining whether the scientific testimony proves legitimate or not. In an examination of the California State court legal standard, known as the Kelly-Frye standard, one observes numerous problems, including an unclear definition of general acceptance and the scientific community and potential dismissal of reliable scientific evidence.

To begin with, one might consider the Kelly-Frye standard itself and its use of the words "general acceptance." The Kelly-Frye standard demands that the science prove general acceptance in the scientific community from which it stems in order to verify the reliability of the science. However, the State court never defines general acceptance therefore, the Kelly-Frye standard constitutes a vague definition of scientific reliability, since it could range from acceptance by all of the scientific community to some of the scientific community.

Ironically, another meaning of general, a key word in the Kelly-Frye standard, is vague or not precise. Not only does Kelly-Frye prove general in the term general acceptance, but the standard also proves vague when describing who must accept the science. The scientific community from which it stemmed could range from the research group that founded the theory to the professors and students of the general study, such as mathematics. Such generalities only make applying the Kelly-Frye standard more difficult. As Kelly-Frye equates an imprecise standard, judges are left with a subjective standard that does not clearly define the reliability of science.

Furthermore, as noted previously, the Kelly-Frye standard excludes novel science. In order for a science to be generally accepted it must have enough time to be shared with other scientists. Time also allows a theory to gain stature after being critiqued by well-known theorists and scientists. In order for a science to gain the necessary popularity, some time must pass for the theory to spread. As a result, new scientific theories lack this element of

time. Although a new theory may prove scientifically correct, the Kelly-Frye test will likely determine the theory unreliable since it would most likely lack general acceptance within the scientific community. Unfortunately, this dynamic counters the very goal of the Kelly-Frye standard. The purpose of the Kelly-Frye standard is to only admit reliable scientific testimony, but, instead, the Kelly-Frye standard leads the court to omit reliable scientific testimony simply because the science lacks age.

Overall, the California State court reliability test for scientific testimony, the Kelly-Frye standard, possesses major flaws in the areas of its wording and effect. By using the term general acceptance, the court makes the standard highly subjective. The judge could demand that only some scientists accept the theory or that all scientists accept the theory. Furthermore, the Kelly-Frye standard fails to clearly specify who constitutes the scientific community in which general acceptance must occur. Finally, Kelly-Frye denies acceptance to veritable scientific testimony that simply lacks the age necessary for popularity and general acceptance. With vague wording that makes the application rather subjective and a contrary effect that omits reliable science, the Kelly-Frye test fails to effectively achieve its goal of screening junk science out of the courtroom and admitting reliable science before the jury.

Daubert -- A Federal Failure?

Just as one should evaluate the California state standard of reliability for scientific testimony, one should also consider the frailties that may exist in the Federal Daubert test of reliability to identify obstacles to the effective use of scientific testimony in the court system. Clearly, Daubert gives quite a bit of power to the judges. According to the Daubert standard, the judge himself determines whether a science proves reliable or not. Instead of referring to the scientific community to determine the reliability of the science, the judge has the liberty to consider various factors of the science. However, as utilized by Justice Breyer in the *Kumho Tire* case, these prongs remain arbitrary, and the judge himself may determine the weight of external factors.⁷⁸ Implementing the Daubert Test, Federal courts mistakenly appoint the judges as gatekeepers of scientific evidence, often in areas of science where the judge has little or no background. The over-empowerment that the Daubert test gives to judges

⁷⁸ *Kumho Tire Company, Ltd.*, 526 U.S. at 156.

debilitates the process of effectively determining the reliability of scientific testimony.

Giving incredible power to judges, the Daubert standard places the reliability of science in the hands of individuals with little familiarity with the subject. As previously discussed, most judges lack any formal education in scientific study. However, disregarding the arbiter's unqualified state, the Daubert test empowers a judge to determine whether a science proves reliable or not. In the process, the judge may use a medley of considerations, including but not limited to the previously mentioned four main factors. As Subject 005 asserted, "the down side for Daubert is it gives judges incredible terms of flexibility..[which] will shield these decisions made by judges."⁷⁹ Daubert gives judges great flexibility in their decisions on whether scientific testimony proves reliable and should be admitted.

Even as the Daubert test gives judges great flexibility, it also encourages them to consider factors that are strongly tied to scientific study, which judges often lack background in, leading to an improper application of the Daubert standard. In determining the reliability of scientific testimony, judges may consider whether the theory has been previously tested.⁸⁰ In considering the factor of testing, the judge may need some familiarity with what constitutes an appropriate experimentation.

However, as Subject 003 acknowledges, "Nobody [in the legal arena] knows what it means to be tested or what it takes."⁸¹ A judge may also base his admittance or rejection of the testimony upon whether the science has been peer reviewed or published.⁸² In taking such a factor into consideration, the judge may desire to know which journals are most respected and what peer review serves as a legitimately scientific and educated critique. Another area in which the judge may require some background in science is that of determines whether the scientist utilized appropriate standards of control in his testing and statistical knowledge concerning acceptable rate of error.⁸³

⁷⁹ Subject 005, *supra*.

⁸⁰ Daubert, 509 U.S. at 12c.

⁸¹ Subject 003, *supra*.

⁸² Daubert, 509 U.S. at 12c.

⁸³ *Id.*

While each of the factors of the Daubert standard may prove to serve as a vital consideration in the judge's determination on the reliability of the scientific testimony, each factor also require some sort of scientific background to be properly applied. In effect, the Daubert standard requires a basic background in science that most judges lack, leading to over empowerment of unqualified arbiters.

As anticipated in the decision of the *Daubert I* case, the Daubert test opens up a variety of avenues for various scientific theories to enter the legal arena. By expanding the definition of reliability and giving more power to the judges as pseudo-scientific experts, the federally instituted Daubert test offers a liberal means to define scientific reliability. The *Daubert I* case decision foresees problems with this liberal standard as it discusses "apprehension that abandonment of 'general acceptance' as the exclusive requirement for admission will result in a 'free-for-all' in which befuddled juries are confounded by absurd and irrational pseudoscientific assertions."⁸⁴

Concern arises, however, as the Court loosens the standard for the admission of scientific testimony. As judges find themselves attempting to apply scientific concepts to determine the reliability of a science that they have no background with, they may find themselves letting in the junk science that the Daubert standard had intended to keep out of the courts. Subject 003 recalls an incident with a judge:

One case I worked on in the federal level under Daubert, the judge was taking pretty much anything goes attitude towards scientific evidence.... My opinion is that Daubert should be applied in amore stringent way.⁸⁵

All together, the Daubert standard gives too much power to judges who possess limited scientific knowledge, which hinders their ability to determine scientific reliability of expert testimony and eventually leads to the cautious admittance of inappropriate scientific evidence. The Daubert test creates a liberal standard that has led to an ineffectual application by unskilled handlers and the admittance of the much-loathed junk science into the courtroom before a jury.

⁸⁴Id. at 595.

⁸⁵ Subject 003, supra.

SOLUTION:

IMPORTANT IMPROVEMENTS

Once current flaws are identified and filtered from the courtroom, one may design an improved system that will address the common problems. In doing so, the courts might produce a more effective system of identification of reliable science. As a result, less junk science will permeate the courtroom yet veritable science will still be admitted. Still, rather than create an entirely new standard, which has not been reviewed for its own flaws, the courts should simply modify existing standards to amend their flaws. In turn, the courts should analyze the efficacy of the existing standards and create a single standard, modified standard, resembling the Daubert test, for both State and Federal courts, implementing basic educational requirements for expert witnesses and judges evaluating a case incorporating scientific evidence.

To begin with, one should select the Daubert standard as a basic framework, since it offers potential for improvement. Unfortunately, the Kelly-Frye standard of general acceptance alone does not allow for novel science, whether it proves reliable, in actuality or not. General acceptance alone puts the science at the will of societal popularity, not a characteristic intrinsic in all reliable science, but only an eventual effect. Rather, while keeping general acceptance in consideration, the Court should implement a standard that examines the intrinsic character of the science by evaluating the scientific method used in drawing the scientific theory. As the *Daubert I* opinion points out:

Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence...These conventional devices, rather than wholesale exclusion under an uncompromising 'general acceptance' test, are the appropriate safeguards where the basis of scientific testimony meets the standards of Rule 702.⁸⁶

In essence, the court should thoroughly evaluate the intrinsic reliability of the evidence over the effectual general acceptance that may or may not result from

⁸⁶ Daubert, 509 U.S. at 596.

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reliable science. The first, second, and fourth prongs of the Daubert test allow for an examination of the test itself, peer review by other scientists, and consideration of the rate of error, and standards of control. All of these factors evaluate intrinsic aspects of the science and cut to the heart of whether the science proves reliable.

Still, as judges often lack scientific background, they should not be appointed unconstrained gatekeepers, but, rather, the court should amend the Daubert Standard to place high value on general acceptance. However, if the science lacks general acceptance and remains newly generated in the scientific community, judges may still refer to other intrinsic factors of testing, standards of control, rate of error, and peer review to evaluate reliability. Simply modifying the current Daubert standard, the court might form an effective tool for screening scientific testimony.

The modification and implementation of a single over-arching standard in both Federal and State court will also solve the problem of forum shopping. If only one standard exists in both forums, then the parties will possess no incentive to manipulate the system for a particular forum in regards to admitting the scientific testimony. The standardization of a single test will prevent several battles between legal parties regarding where the case will be held. Standardization of the Daubert test will effectively minimize disputes and clarify the most appropriate means of substantiating scientific reliability.

While some may argue that the standardization of the Daubert test will not nullify the problem of hired guns, or the whoring of expert witnesses, the answer still does not lie in refusing financial incentive for expert testimony, but rather in educational standards. By taking away financial incentive altogether, the court would prohibit the use of qualified experts in the courtroom. Qualified scientists often keep very busy schedule and have many responsibilities. To encourage such qualified experts to participate in a legal case, the court must be able to offer the expert some sort of incentive. Commonly, such incentive comes in the form of money. Subject 003 remarks:

Most people when looking for expert witnesses, in the fields that I work in, look for academics like academic scientists, and academic scientists are usually very busy people and doing important work. To take time off to go participate in a court case, takes a lot of time away from other things, so that's partly why you have to pay them well, to make it worth their time.

And it's also why it's often difficult to get the best people to be expert witnesses.⁸⁷

Furthermore, the cost of qualified experts equals out if the government does not have to pay for the judge's time being wasted listening to a battle of mediocre experts. Instead of encouraging legitimate testimony by forbidding financial incentive, the court should apply an ethics education standard. To serve as an expert witness, an expert should pass an ethics certification course that stresses the importance of truth in court testimony. The court should require the completion of such a government-instituted program of every scientific expert witness to testify in a court of law. As previously addressed, the result of tainted testimony solely depends upon the individual witness and the maintenance of his own integrity. Such a course would simply encourage expert witnesses to maintain ethical standards and not give misleading testimony to serve his party's interests.

As the end of hired guns depends upon an educational system, the proper implementation of the Daubert test also requires an educational system for the gatekeepers of scientific testimony in the courts. In order for the gatekeepers to properly identify what substantiates reliable science and junk science, they must possess some background in the area of scientific study, particularly the over-arching use of the scientific method.

To correctly identify an appropriate testing procedure and appropriate standards of control, the judge should have extensive knowledge of the scientific method. The program should include various examples of implementation of the scientific method. The program should also apply those examples to the four main factors considered in the Daubert test. The certification course should incorporate hypothetical situations in which the scientific method has been applied appropriately or inappropriately. The judges should be able to identify the appropriate use of the scientific method and the implication that the testing has upon the factors considered in Daubert. The course should also incorporate some statistical study, so that judges may determine whether the scientific theory possesses an acceptable standard rate of error. A course involving intense study of the scientific method and statistics should prepare judges to serve as effective gatekeepers of scientific testimony

⁸⁷ Subject 003, supra note 11.

in the courts. As judges never know when they will be presented with scientific evidence, the court should require this science certification class of all judges.

CONCLUSION

In the end, the courts may effectively improve the existing system for the screening of scientific testimony by applying a standardized use of a modified Daubert test and educational programs for both expert witnesses and judges at both State and Federal levels. While standardization of a single standard in both State and Federal courts would decrease forum shopping, the application of the Daubert test also allows for reliable novel science and puts greater burden on the judges to determine reliability. However, the modified Daubert standard would still put great weight on general acceptance in the scientific community from which the science stems. While the application of the Daubert standard puts great weight on the judge's analysis, a mandatory science educational certification program would procure correct analyses of scientific reliability. Furthermore, the ethics curriculum mandatory for expert witnesses would decrease the practice known as 'whoring.' Overall, the standardization of a single standard that focuses on the intrinsic elements of science and the extended educational requirements for judges and expert witnesses would eliminate flaws in the existing system of determining scientific reliability, creating a more effective use of scientific testimony in the courts.

See following appendices for select research interview notes.

APPENDIX 1

Research Methodology/Study Procedures:

1. To attain subjects, researchers will contact local law firms and inquire about attorneys and judges that have some experience with expert witnesses in the areas of psychology, medicine, statistics, and economics.
2. Once attaining contact information, researchers will contact possible subjects and provide the possible subject with a brief, non-bias summary of the research. This will be done via both e-mail and phone. Then, researchers will inquire whether the individual would like to participate in the research. If the person says "yes," then the researcher will schedule a time and date for an interview and e-mail the subject the interview questions prior the interview. If need be, the interview will be done solely by e-mail correspondence.
3. If the interview is in-person, then the researcher will meet the subject at the designated location. The Interview will follow the following format:
 - Before starting the interview, the researcher will go over the informed consent with the subject. The student will verify that the subject understands all of the following points:
 - ♣ The researcher is a student doing the interview for research purposes
 - ♣ The interview will take between 20 minutes and one hour
 - ♣ Participation is completely voluntary; they can choose not to answer a specific question or can stop at any time if they wish
 - ♣ The data will be used to write a research paper about the use of expert witnesses in the legal system
 - ♣ The respondent' s name will be released as a source of data in the research paper
 - ♣ If they are audio taped, the tape will be erased after the project is completed
 - ♣ If the interview is done by webmail, the email will be deleted and the hard copy shredded after the project is completed

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- The researcher will then turn on the tape recorder and begin asking the subject the following questions:

Q1: What is your name, occupation, and position?

Q2: Have you ever had any experience with expert witnesses in a state court setting?

If NO--Go to Q3

If YES--Go to Q2A

Q2A: What happened?

- ♣ When did that happen?
- ♣ How were the expert witnesses chosen and used?
- ♣ How did that affect the case being tried?
- ♣ How does the use of expert witnesses affect judges?
- ♣ How does the use of expert witnesses affect juries?
- ♣ Have you had any other significant experiences with expert witnesses at the federal level?

Q3: Have you ever had any experience with expert witnesses at the federal court level?

If NO--Go to Q4

If YES--Go to Q3A

Q3A: What happened?

- When did that happen?
- How were the expert witnesses chosen and used?
- How did that affect the case being tried?

- Have you had any other significant experiences with expert witnesses at the federal level?
If NO--Go to Q4
If YES--Go to Q3A

Q4: Do you have both state and federal experience with expert witnesses that you can compare?

If NO--Go to Q5

If YES--Go to Q4A

Q4A: How did the state and federal experiences differ?

- How did these differences affect the case in point?
- How do you project these differences to affect the future of the judicial system?
- What are the pros and cons of these differences?
- What are the similarities between the state and federal experiences?
- How do you project the pros and cons of these similarities?

Q5: What is your knowledge of the Daubert and Frye cases?

If NONE--Go to Q6

If ANY--Go to Q5A

Q5A: What legal standards do the two cases offer?

- How do the legal standards differ?
- What are the similarities of these legal standards?
- What are the positive points of these legal standards?
- What are the negative points of these legal standards?
- How are these standards applied in the judicial system? Is there consistent deviation from these standards? How?
- What effect do these legal standards and their application have upon the judges?
- What effect do these standards have upon the attorneys in a case?
- What effect do these standards have upon opposing parties?
- What effect do these standards have upon the expert witnesses?
- What effect do these standards have upon the juries?

Q6: In your opinion, how might the legal use of expert witnesses be improved upon?

Q7: Do you have any other comments regarding the use of expert witnesses? [The END.]

APPENDIX 2

Subject 001

University professor of Psychology and Child Development
Date: 4/23/03

Summary:

In this interview, the idea that judges and attorneys must be more educated on the sciences themselves arose. The interviewee strongly pointed out that attorneys and judges will be better equipped if they are educated in the science, particularly in her field of child psychology. The Interviewee also noted the lack of understanding amongst non-scientists, including judges and jurors, that science is not black and white, particularly in psychology. In other words, many theories may be verifiable as a result of different tests, standards, and controls. Again, she addressed the issue of a need for a general education and understanding of science above the need for legal standards of admissibility. "[E]ven though Daubert' s more specific, I' m not quite sure that the specificity is anymore useful if. . don' t have a general sense of how research works."

Important Quotes:

2. Testified in court as advocate in one case and qualified witness in two cases.
3. Background:
 1. Psychologist in Pediatric hospital
Child forensic interviewer in child sex abuse cases.
 - Conducted interviews
 - State's attorney, Child Protective Services, & investigating cop behind one-way mirror
 - Integral in making decision on what to do with child
 - Some cases end up in court system
 - Qualified witness in two of these cases

2. Child's therapist:

- Child sex abuse case
- Issue of custody

4. Effect of Testimony:

- Family Court case: (when therapist)
- Chance to sit in on court's ruling
- "It was my impression that my testimony was quite influential in those cases in terms of giving credibility to the children's allegations as well as the aftermath of the impact of the sex abuse on these kids and how that might affect returning children to homes when sex abuse took place, either to parents who were not able to protect children in those cases or to potential perpetrators."
- "It was my impression that...what was influential about it was I've been trained, as a child forensic interviewer, to just present data, present the facts."

5. How chosen- Role as therapist & expertise in expert trauma:

- "Many therapists who do this type of work don't necessarily have a doctoral degree."
- "Sometimes just being a therapist doesn't necessarily give credence to your testimony...people are cautious about that...you're going to be overly advocating for the child and your going to miss information or misinterpret information."
- "There wasn't a whole lot of questioning of my credentials"
- "What does get question is how I'm interpreting the information."

6. Family court: judge

- Custodianship
- More leeway to talk
- Criminal court: more frenzied
- Not much prep time
- Judge asked more questions
- Challenged more by defendant's attorney
- "More at stake"
- Public defenders used: less time
- Weren't as skillful in their challenges as expected

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7. How do you project these differences to affect the future of the judicial system?

- "I just think there needs to be a lot of education of both attorneys and judges and anybody..involved in any kind of legal aspect..when it comes to children in abuse cases."
- "Need for education on child psychology, child development..children' s language and how they tell their stories."
- Once did presentations to judges on myths of such cases: like children telling lies
- "The courts are not child friendly"

8. What is your knowledge of Daubert and Frye?

- Read something about it, but couldn' t tell you the details of it

9. Do you think one of these standards would be more valid/effective than the other?

- Can't really say

10. Sounds like with the Frye test that you must establish a general acceptance with that test.

- "What does that mean?"
- "Need to establish what is general acceptance for the science"
- Daubert: Judges free to evaluate without the education
- "Either one of these tests would not be effective without the education."

11. Assuming most of these cases have judges w/o this background.

- "The Daubert test at least provides specific criteria for the judges. However, I don' t know if these criteria are..very black and white. When it comes to psychological research, research is not static. It' s..ongoing. It' s fluid..we' re constantly generating new information and..new knowledge."
- "[E]ven though Daubert' s more specific, I' m not quite sure that the specificity is anymore useful if..don' t have a general sense of how research works. "

12. How might improve legal standard:

- "Education. Education. Education of not only judges, but attorneys."
- Need to understand: "Depending on how you do research, you can have 20 different answers to the research question."

- "Recognize that just because things are very young in the field doesn' t make it any less valid."
- New science does not throw away old science
- "Depending on how the research is designed..we get new information about that. It doesn' t necessarily mean that they' re in conflict, but they' re taking different perspectives of the same issue."
- "We' re adding on our knowledge base over time."
- "We can never really..dwindle down..science to one or two research projects, articles, or outcomes. We have to look at the whole and what has..contributed to those different knowledge bases..It' s not black and white. It' s not one way or the other when it comes to science, specifically psychological science. And I think court' s operate on a very black and white criteria..they have a hard time with ambiguity..when psychologists come into play in the legal system."

Note: Research design - different outcomes depending on experimental setting or ecologically valid setting.

"In research situation where you have very highly controlled situations, such as in a lab, you get certain results. Whereas, you do research in a community or real-life systems, you can get other results, but you have less controllability of the factors..in a court system it just creates a lot of confusion..because there isn' t an understanding of how these different research methodologies, these different levels of control in a research setting, can affect the information that we gather."

Training: in child forensic interviewing

APPENDIX 3

Subject 002

University professor of Psychology
Private Practice in Clinical Neuropsychology and Forensic Psychology
Date: 5/2/03

Brief Description:

I learned that some expert witnesses presume that there is no real difference between state and federal courts. She appears to have little faith in the legal standards and depends more on the judge's personal biases. "I don't think making it more specific or making it more ambiguous as to what the guidelines are for determining whether expert witness testimony in a particular area for a particular court is going to make any difference to the judge. He's going to decide what he's going to decide whether he's got specific guidelines or leeway." However, he clearly believes judges can handle interpreting and utilizing the legal standards of scientific reliability.

Important Quotes:

Expert Witness in State Court:

- Testify regularly
- Background on cases:
 1. Independent evaluator for board of prison terms
 - Go to state prisons and state forensic hospitals and do evaluations of people under Sect.2962 PC - penal code for mentally disordered offender
 - Purpose of evaluation whether meet certain criteria:
 - If meet criteria, placed in a hospital rather than on parole in the community
 - If don't like decision made by judge, fight it
 - Called into court to testify on behalf on what wrote on report (MDO evaluations)

2. Evaluations for trial competency
 - Why did or did not find person competent to stand trial
3. Testify on not guilty by reason of insanity evaluations
4. Private practice in clinical neuropsychology
 - Hired by attorney (usually civil case)
 - Testify whether person has neuropsychological dysfunction or not

No formal training?

- "Learn by doing."

How were you qualified?

- Are you licensed
- Are you a clinical psychologist
- How many MDO evaluations have you done (circular logic)-◇
how does this determine quality
- Thought: perhaps previous evaluations were unreliable

How cross-examination questions science? (Not really pertinent to Daubert and Frye)

- Ask how reliable and valid certain tests are that are utilized

How would you say testimony affects judge?

- "Depends on the judge. Some judges have already made up their mind I think."
- "I don' t think my testimony has much of an effect."
- "I have no clue how much influence what I say on the stand has on the judges decision, or the jury' s decision."
- "I never get any of that feedback."

Do you have any experience as an expert witness in the federal court level?

- No, no clue how to qualify in the federal court level.

In your opinion how do these legal standards differ?

- "I don' t think they differ at all."

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- "One appears to be more specific in terms of the guidelines given to the judge, but, in reality, the one that's more ambiguous that just gives leeway to decide what's a science and what is not." --- opposite
- "I don't think making it more specific or making it more ambiguous as to what the guidelines are for determining whether expert witness testimony in a particular area for a particular court is going to make any difference to the judge. He's going to decide what he's going to decide whether he's got specific guidelines or leeway."

You don't mind that the judge determines what the science is?

- "I don't think it matters which guideline he uses."

Daubert prongs:

- "I think the judge is equipped to handle that."

Would you suggest any changes in how the judges approach science?

- "No."

Any improvement to improve quality of expert witnesses coming in:

- "No, they're sufficient as they are."
- "I'd qualify under either one of them. I don't think it would make any difference."

Comments on use of expert witnesses in court system:

- "I think that the court's ought to spend the money to pay the expert witnesses rather than having folks on either opposing sides hire people, because when that happens you get too many hired guns."
 - In many cases:
 - 2 neuropsychologists: one for each side
 - "You can always find somebody with an opinion that agrees with whatever you want him to."
 - Should happen:
 - Court should pay money
 - Panel of expert witnesses (could be long list)

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- Need standards/qualification depending on evaluation necessary (in putting on panel)
- Even with standards, will get variability in skill level
- Set standards for particular types of cases
- (My thought: still requires assumptions and basic scientific knowledge amongst court personnel who set these standards)
- Important that free from pressure of paying counsel
- Need understanding of legal standard - many people don' t have and don' t give court what asking for, write poor reports
- Attorney's could pick one person to do evaluation from panel (My thought: still have opposing views)
- Not have defense or prosecutor pay
- "There' s just too much pressure on expert witnesses to testify in a certain way based on the money that they' re getting from one side or the other."

Example of need for science: 2 diff. opinions:

- Def. Pleads insanity after pleading guilty..must testify why isn' t
- Man in jail awaiting has neuropsychologist that determined dementia
- Dementia requires progressive illness
- Usually occurs after significant head trauma/as get older
- Never happened to subject
- Found out in history prior to stabbing
- Held leadership position
- Neuropsychologist gave bunch of tests and came to conclusion that
- Did not coincide with real-world activity of individual
- Note, "People are swayed by money."
- "A lot of the reason why there are differences of opinion like this is because of money."

APPENDIX 4

Subject 005

University professor in Ecology and Evolutionary Biology
Date: 5/5/03

Summary:

In this particular interview, I learned the role of an expert witness becomes explaining a complex science to jurors in "layman' s" terms, much like a brief lecture. I also learned more about the extent of the judge' s gatekeeping abilities. Judges establish how much time and how thoroughly an expert will explain the applicability of his science. Further, I realized a serious difference amidst the presentation of expert testimony to judges versus jurors. The interviewee noted that judges have the opportunity to ask questions unlike the juror. This may indicate a problem in trials involving juries. Finally, I gained a basic understanding of the problem that lab error may occur, and this is why opposing testimony is offered to note the fallibility of science performed by man.

Important Quotes:

Experience in State Court

Argument typically proposed on DNA evidence:

- Lab error
- Others may argue aren' t these lab errors rare
- But "the numbers that are attached to how rare the genetic profiles are even rarer"
- Forensic labs don' t bother estimating possibility of lab errors
- All scientists make errors:
- "I don' t know of anyone on this floor who' s gonna tell you, ' Oh, when we do an experiment, we never make errors.' We all make errors."

Judges and Juries

- How to communicate:
 - "I can only say what I try to do. I try to use analogies first to get people thinking."
 - E.g. "Well, I got a great missile system, because once its fired it only misses the target one out of a million times..[W]hat he forgot to tell you is it only fires 50% of the time."
 - Begin to understand process is more complicated
 - "In a trial, the judges really don' t have to understand stuff..the judges have the luxury to actually sit back and read."
 - "In Oregon, one of the first cases I did..[Judge] wanted to know the difference between the Pacific Salmon and the Atlantic Salmon..The DNA and forensics weren' t his primary concerns."
 - "Judges can ask questions. That' s an advantage for them."

APPENDIX 5

Subject 003

University professor of Criminology, Law & Society
Date: 5-14-03

Summary:

In this particular interview, I gained insight into the attorneys' use of legal networks to select witnesses who will provide preferential testimony for their case. The interviewee added information on how "whoring" of expert witnesses may be conducted in the case that facts are simply presented favorably, but lies are not necessarily provided. I also gained some anecdotal information on how Daubert offered the opportunity for novel testimony that

was not permissible under Frye to enter the courts. The interviewee stressed the need for expert witnesses. Finally, he noted that the enigma is that jurors will often base a decision on arbitrary factors and may entirely misunderstand the scientific testimony. Like jurors, judges may lack this scientific education when it comes to interpreting scientific evidence.

Important Quotes:

Experience in State and Federal Court setting -as expert witness
Experience in putting on and examining expert witnesses in state court as a lawyer

Choosing expert witnesses:

- "They' re chosen based on the relevance of their expertise to some particular issue."

Verification of political networks:

- "Usually, there are networks..among lawyers, there are sort of networks of groups that become well-known. Certain people who become expert witnesses..Once they testify in a case, it becomes known that they' re available, and people who like what they have to say will call them again."
- "In some areas like DNA testing, the same experts testify over and over again."
- "Other times, if it' s a more novel issue, you have to go out and look for people."
- I went around calling up people
- 1st engage them: there' s this interesting scientific question that' s arisen in this legal case, can I come by and show you some stuff
- "You kind of engage them and get them interested in the problem. Then, it' s easier to persuade them to become an expert witness. Being able to offer them money also helps."

Difficult to get best, must persuade with pay.

- "Most people when looking for expert witnesses, in the fields that I work in, look for academics like academic scientists, and academic scientists are usually very busy people and doing important work..To take time off to go participate in a court case, takes a lot of time away from other things, so

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that' s partly why you have to pay them well, to make it work they' re time. And it' s also why it' s often difficult to get the best people to be expert witnesses."

Need for Expert Witnesses: use in solution: Uneducated lawyers

- "We are increasingly in a technical era where factual disputes in courts cannot be resolved without scientific experts..You have to have an expert to present it, and, increasingly, you have to have an expert to evaluate it. **The lawyers aren't going to understand it... of course, we have to have experts."**

Un-education:

- "Judges and juries who haven' t been exposed to the technical literature may not know what they need to know to reach a reasonable decision."

Deference to people who come in with credentials and aura of science

- "The real open issue is ' Are jurors able to distinguish good expert testimony from bad expert testimony?' ..And ' How active do judges need to be in screening out bad science before it gets to the jury?' "

Whoring:

- "He gave me an answer that I liked, and so I decided to call him. If he had given me an answer that I hadn' t liked, I would have looked for someone else..the lawyers can pick and choose experts."
- "I think that lawyers are all the time trying to influence their experts."
- "Nobody wants to be treated like a whore. What tends to work better..often, when I make the pitch to experts, it' s about when I want them to be critical of a forensic lab. I talk about standing up for good science..It' s important for you to be critical, because it' s going to raise the standards of science..I portray the attack on the crime lab to be a really virtuous things..so we' re on the side of justice."
- "Of course, the..prosecutors are saying..these poor victims, the rape victim, the murder victim. Nobody speaks up for the victim. We' re just trying to get to the truth."
- "There sometimes is pressure on experts..especially on people who work for small private labs..got to keep the customers happy. It doesn' t mean

they' re going to outright lie, but, if there' s two ways to present something and one makes their client happier, sure, that' ll happen."

Shades of gray:

- "You can go shopping for experts, and, on any issue, there tends to be an array of opinion."
- "Nobody will say black is white..There are shades of gray. If it' s gray, they' ll vary it on how gray they think it is."

Frye and Daubert (background):

- "You tend to see Frye and Daubert challenges either with new techniques, like a brand new type of DNA testing, or techniques that have become controversial. Like fingerprinting is now getting challenged a lot, because there' s a controversy that' s erupted about do we really know that fingerprints are unique and is there subjectivity in fingerprinting."

Interesting dynamic for Daubert:

- Problems: Inconsistency- "Almost never, do you find a court under Daubert excluding scientific evidence presented by a prosecutor in a criminal prosecution, but, very often, you find courts excluding evidence under Daubert offered by a plaintiff..in a civil action..I think there is some inconsistency."

Example of Kelley-Frye victory:

- "I represented ...this Amish guy accused of murder and incriminated by DNA evidence. I was able to get the DNA evidence excluded under Kelley-Frye grounds basically by showing that the FBI..had not yet validated a couple aspects of the test [the RLFP analysis]. One was the match standard. How do you know whether two DNA profiles match or not? They hadn' t yet done much validation of that. There was also controversy at the time about the validation of their statistical evidence..so that was ..in ' 91, although thereafter..a lot more validation was done, and, eventually, the FBI test was well-established."
 - In the [---]case- "Although I wrote a brief over a hundred pages..which I thought was the strongest case I could have made..on the other hand, I was telling the lawyers..this is looking like a loser, because the DNA evidence was actually well-

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established by this point..The problems were more case-specific..which really aren' t issues of admissibility."

Opportunity to Forum shop:

- "Although I actually think that the defendant' s study probably was changeable on Daubert grounds, on grounds that it wasn' t an adequate sample..but those who were litigating it were like, ' Let it in. We' ll deal with it as an issue of fact.' "

Daubert v. Frye: Problems w/ Daubert

- "One case I worked on in the federal level under Daubert, the judge was taking pretty much anything goes attitude towards scientific evidence..My opinion is that Daubert should be applied in a more stringent way."

Jury understanding/education:

- "After the last case I litigated..I had the graduate students to see how well they understood things. I was appalled at how poorly they understood things. I was surprised and dismayed at how little had gotten through and how much they seemed to have decided things based on their preconceptions about what DNA evidence is, rather than the actual evidence they heard..My experience is they have some difficulty."
- "I' m sure that with enough expert testimony, with a careful enough development of the case, you could probably educate them to a lot of things. It' s led me to..be even a stronger supporter of having strict admissibility standards..to expect the jury to understand well enough to separate good from bad science may be expecting too much a lot of the time..It makes me think that strict admissibility standards are a good idea, so my experiences make me even more of a supporter of that."
- "Kelley-Frye..doesn' t require that the judge himself/herself actually understand the science very well, just assess what scientists think. In theory, it' s a little easier to applyAlthough in practice, it' s not quite so easy, because the theory is the judges just have to ask what scientists think, but the question is what they think about what..I found that..the alleged advantage of Frye that judges didn' t have to understand science so well kind of went out the window when DNA evidence came along, because the judge had to understand a lot of technical issues to decide what was a new technique, what is a

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technique that has to be evaluated, and so on..also..there' s a lot of vagueness to Frye..who has to accept it?"

- "Daubert I think is not much better."
- "Nobody knows what it means to be tested or what it takes."
- "Daubert has set a really high bar in the civil arena."

Judicial education:

- "I think there are concerns of how sophisticated the judges are. There' s a nice study done by a woman by the name of Margaret Covera where she presented judges with a series of studies for them to evaluate. The studies had various functional flaws..the study was to see how well judges could detect problems in research studies. They stunk..they did not do very well. They did not detect problems in research very well. **I think it's just a lack of scientific education.**"

APPENDIX 6

Subject 007

University professor of Social Ecology, Anthropologist
Date: 5-14-03

Summary:

In this particular interview, I learned of some of the disdain that individuals have for the whoring of expert witnesses. The interviewee provided consistent examples of how the financial incentive for expert witnesses may taint their testimony. The interviewee also addressed the fact that experts still have the ability to refuse to "whore" themselves and misrepresent their science. However, other experts will willingly misrepresent the science. The interviewee also expressed concern over the idea that a judge determining what constitutes scientifically reliable or not may be fallible, since the judge does not fully understand the scientific field.

Important Quotes:

Experience in State Court

- Mostly in gang cases
- Both LA county and Orange county
- Guilt/not guilty and penalty cases
- 14/15 cases for 13/14 years
- Mostly called by defense

Whoring

- NOT: "Generally, I turn lawyers away, because I don't feel I can add anything to their case."
- "Lawyers have a bad habit of painting a scene and giving me a scenario that's of course positive on behalf of their client, but not necessarily what I consider the truth."
- "What I try to do as an expert witness is remain true to my discipline and not be a hired gun, or a whore."

Presentation to Jury/Judge:

- Education:
- "Some of the testimony is very pointed to certain key issues that are part of the incident that the person got arrested for..and, other times, I've been allowed by the judge to be real expansive and almost lecture the jury in court. So it depends on the case."
- Education/Judges inappropriately judging
- "One judge didn't even allow me to testify. It was like a hanging jury and a hanging judge for a particular gang shooting and killing..the lawyer was trying to set me up with my background and..qualify me and set up a foundation for me as the expert. And rushed his questioning of me to the point of to where he said, "Why did you bring this guy here? Why did you want him to testify in this case?" The lawyer was pushed to answer this question, "Well, is this guy a gang member?"..I said he wasn't a gang member. The judge said, "Oh, how could you say that coming from such an inexact science." As if the law is such an exact science..I was dismissed from that point on."

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- "I have had mostly open-minded judges that allow me to qualify and allow me to testify. That judge was a rarity. Mostly other judges are pretty good. They know there has to be a fair and balanced trial."

Training:

- No training as an expert witness.
- Except brother in law (attorney) -few main principles:
 1. Listen carefully. Make sure you have the question right
 2. Don' t feel that you have to answer very quickly. Mull that question over.
 3. Only answer the question and don' t offer any information or elaboration.
- Never heard of Frye test
- "I don' t think they have to apply the Frye test for me."

Daubert v. Frye (Problems w/ Daubert):

- "I think it' s better if you have the peers be part of the qualification process, instead of just one solitary individual where you have to worry about their political or ideological persuasion."

Whoring/concern of wasting taxpayer money:

- "Let me tell you the truth as I see it. I really think it' s a waste of taxpayer' s money; the way that experts are brought in, including myself. They pay us very well..There' s got to be some better way for us to administer justice and bring experts in ways that are not part of a political network, which is what it has become."
- "People are just hired guns."
- Psychologist, not even psychiatrist
- Working at hospital
- Became rather knowledgeable and helpful in area of trauma connected w/ gang shooting
- Eventually, testified in court
- Realized that could make more money that way
- Open up office in Southern CA and near San Francisco
- Bought self nice little ranch
- Met on same case

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- Says, "If I had a book like yours, I could make a lot of money."
- Other psychologist
- "he listened to my theoretical framework and..wound up in a case using it....This guy was misusing it."

Waste of money:

- Started at \$150/hour, now at \$250/hour
- Only recently instituted that fee
"To be frank with you, I actually cite a higher figure to discourage lawyers, and then they come back with these court appointed documents."